Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Effects of Communications Towers	)	
On Migratory Birds	)	**WT Docket No. 03-187**
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To: The Commission

COMMENTS of Nickolaus E. Leggett
N3NL Amateur Radio Operator

The following are comments from Nickolaus E. Leggett, an amateur radio operator (Extra Class licensee – call sign N3NL), inventor (U.S. Patents # 3,280,929 and 3,280,930 and one electronics invention patent pending), and a certified electronics technician (ISCET and NARTE). I also have a Master of Arts degree in Political Science from the Johns Hopkins University (May 1970).

My comments discuss birds' interactions with communications towers and potential inventive steps to improve the interactions. Many of my comments are based on my direct observations of birds as well as my experience as an inventor.

Birds' Interactions with Communications Towers

In general, birds interact well with communications towers and other artificial structures. Birds are capable of complex aerial maneuvers that allow them to navigate around communications towers and to land and perch on such towers.

On a clear day, birds are able to see and avoid towers without problems. However, a potential problem arises at night especially in the rain or fog. It will take

several years of research to determine the scope of this potential problem and to develop reasonable countermeasures.

Tower Height

My own observations suggest that low towers are not a problem for birds. I frequently (several times a week) ride my bicycle along the Washington & Old Dominion trail here in Northern Virginia. Much of this trail runs along a right of way under high-tension electric power lines. I have seen very few dead birds in my many years of riding along this trail.

The electrical towers are over 100 feet high, which is quite short by communications standards. However, there are numerous towers along the trail at a spacing of several hundred feet as well as cables running through the air between the towers.

The Commission should conduct a scientific study along this trail to confirm my observations.

Tower Lighting

It is doubtful that the aviation obstruction lights mounted on towers are useful for birds. To a bird, such point sources of light are meaningless or even confusing. However, if floodlights light the tower, the birds would probably see it and avoid it just as they avoid lighted buildings.

Lighting a tall (over 1000-foot) communications tower is a difficult and expensive proposition. Included in the cost is a continuing significant electric power cost as well as a continuing maintenance cost. In addition, such lighted communications towers would be quite obtrusive and would interfere with peoples' enjoyment of the dark night sky.

The International Dark-Sky Association (IDA) [3225 N. First Ave., Tucson AZ 85719 USA] would probably object to such floodlighted towers. In addition, both professional and amateur astronomers would object to them.

Methods to Minimize Impacts

The Commission should examine inventions that could minimize bird impacts.

One such invention would be wind-driven whistles mounted on the tower and/or guy wires that would provide a warning noise to the birds. The design goal would be a noise that is loud enough to deter birds and yet quiet enough not to bother nearby residents. If birds have any hearing outside of the human range, the whistles could use such frequencies.

Another possible system is to use strings of light emitting diodes (LED's) or electroluminescent lights mounted on the tower and the guy wires. These light sources would outline the hard structure of the tower for the birds to see. The output power of the lights could be strong enough for birds to see and yet weak enough not to be obtrusive or objectionable to people. This system would have problems due to lightning strikes or other severe weather disabling the lights.

Since an easy solution to this problem is apparently not available, the Commission should sponsor a competition in the engineering and invention community to study and develop warning systems for birds.

Staff Expertise

The Commission should contract with several university research groups to acquire expertise in this subject. Having several groups on tap would allow them to provide peer review in this field where many of the findings are controversial.

Recommended Actions

The Commission should continue to actively study this subject and conduct design competitions for systems that could warn birds away from communications towers.

Respectfully submitted,

Nickolaus E. Leggett
1432 Northgate Square, Apt. 2A
Reston, VA 20190-3748
(703) 709-0752
nleggett@earthlink.net

Electronic copies are provided as requested to Qualex International (qualexint@aol.com) and to Mr. G William Stafford (Bill.Stafford@fcc.gov).